

CLAIMS

1. A damper, in particular for motor vehicles, comprising a cylinder (2) containing a hydraulic fluid, a main piston (1) actuated by a stem (3) defining in the cylinder a first chamber (2a) and a second chamber (2b), said second chamber containing the stem, a hydraulic fluid reservoir (6) and a valve (10) placed in the hydraulic fluid flow between the first chamber and the second chamber, said valve comprising a movable valve element (28) cooperating with a seat (30) and means designed to press the valve element onto its seat, characterized in that it further comprises filtering means mounted (16) in parallel with the valve (10), adapted to generate a filtering control pressure acting on the valve element of the valve, the control pressure depending on the pressure differential at the inlet and at the outlet of the valve.
2. The damper as claimed in claim 1, characterized in that the filtering means comprise: a balancing chamber (17) divided into two parts by a movable piston (18), the two parts of the balancing chamber being respectively linked by pipes, on the one hand to the inlet of the valve, itself linked to the first chamber of the cylinder and on the other hand to the outlet of the valve, itself linked to the second chamber of the cylinder and to the reservoir, the movable piston being subject to the action of a balancing spring means (19); and a filtering restriction (21) mounted in the pipe linking one of the parts of the balancing chamber to the valve; a filtering pipe (24) also linking said part of the balancing chamber to the valve in order to apply the filtering control pressure prevailing in said part of the balancing chamber to the movable valve element of the valve.

3. The damper as claimed in claim 1 or claim 2, characterized in that the movable valve element (28) of the valve (10) is subject to a closing force designed to press the valve element on its seat.
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4. The damper as claimed in claim 3, characterized in that the closing force is generated by a spring.
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5. The damper as claimed in claim 3, characterized in that the closing force is generated by means of a hydraulic pressure differential created by a restriction (44) mounted upstream or downstream of the control valve (10).
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6. The damper as claimed in any one of the preceding claims, characterized in that the movable valve element (28) of the valve (10) is subject to a force designed to open it at the high displacement speeds of the damper stem, this force being generated by a hydraulic pressure differential created by a restriction (50) mounted downstream or upstream of the control valve (10).
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7. The damper as claimed in any one of the preceding claims, characterized in that the valve (10) comprises a control chamber (25) linked at the inlet, adjacent the seat of the movable valve element (28), to the first chamber of the cylinder, linked at the outlet to the second chamber of the cylinder and also receiving the filtering pressure; and that the movable valve element comprises a valve element head (29) capable of cooperating with the seat, a valve element stem (31) and a valve element piston (32) integral with the stem at the opposite end from the valve element head; a regulation cylinder (33) being housed inside the control chamber and
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defining a first closed regulation chamber (33a),
inside which the valve element piston slides.

- 5 8. The damper as claimed in claim 7, characterized in
that the regulation cylinder defines a second
closed regulation chamber (33b) containing the
valve element stem.
- 10 9. The damper as claimed in claim 8, characterized in
that the valve element stem has a through passage
(35) connecting the seat of the valve element with
one of the regulation chambers.
- 15 10. The damper as claimed in any one of claims 2 to 9,
characterized in that the filtering restriction
(21) is mounted in the pipe linking that part
(17a) of the balancing chamber (17) linked to the
inlet of the valve (10) and to the first chamber
of the cylinder and that the balancing pipe (24)
20 is linked to the first regulation chamber (33a).
- 25 11. The damper as claimed in any one of claims 2 to 9,
characterized in that the filtering restriction
(21) is mounted in the pipe linking that part
(17b) of the balancing chamber (17) linked to the
outlet of the valve (10) and to the second chamber
of the cylinder and that the balancing pipe (24)
is linked to the second regulation chamber (33b).
- 30 12. The damper as claimed in claim 9, characterized in
that the through passage (35) connects the seat of
the valve element with the first regulation
chamber (33a) and that the regulation cylinder
defines a third and a fourth regulation chamber
35 (33c, 33d) containing the valve element stem, the
valve element comprising an auxiliary piston (43)
separating said third and fourth regulation
chambers.

13. The damper as claimed in claim 9, characterized in that the through passage (35) connects the seat of the valve element with the first regulation chamber and that the regulation cylinder defines a third and a fourth regulation chamber (33c, 33d) containing the valve element stem, a sleeve (46) forming an auxiliary piston (47) being mounted so as to slide along the stem of the valve element, said auxiliary piston separating said third and fourth regulation chambers, the sliding sleeve pressing on the valve element head through the intermediary of a spring link (49).
14. The damper as claimed in any one of claims 5 and 12 to 13, characterized in that said third and fourth regulation chambers (33c, 33d) are subject respectively to the pressure downstream and upstream of the restriction (44) mounted on the outlet pipe of the valve.
15. The damper as claimed in either of claims 12 and 13, characterized in that the stem (31) comprises a shoulder (31a) in the third chamber (33c).
16. The damper as claimed in claim 15, characterized in that said third and fourth regulation chambers (33c, 33d) are respectively subject to the pressure downstream of the restriction (21) mounted on the outlet pipe of the valve toward the second chamber of the cylinder and to the pressure downstream of a restriction mounted (50) on the outlet pipe of the valve toward the reservoir.